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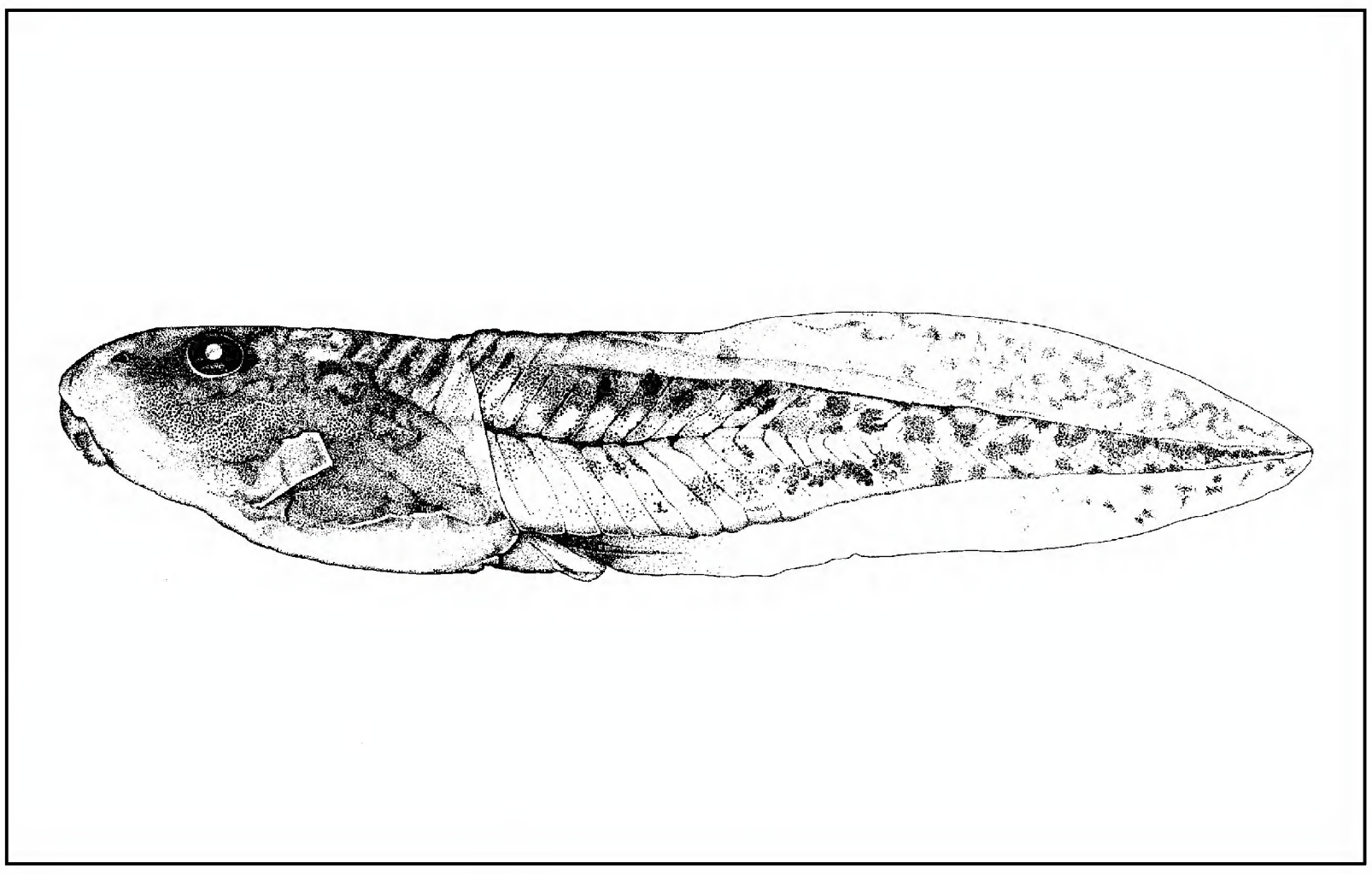

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Notes on New Taxa of Typhlopid Snakes from Pakistan (Serpentes: Typhlopidae)

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Abstract

Recently four new taxa of typhlopid snakes were described from Pakistan. Since descriptions of most of these new species and subspecies were published in journals not readily available in the West, the present paper deals with the salient features of the new taxa.

Introduction

Until recently, only two blind snakes, *Ramphotyphlops braminus* and *Typhlops porrectus*, were known from Pakistan (Smith, 1943; Minton, 1962, 1966; Mertens, 1969; Khan, 1982, 1993). With the description of three new species and a subspecies the number has arisen to six (Khan, 1998, 1999a,b). The new subspecies *Typhlops diardii platyventris* adds the first typhlopid with 22–24 scale rows at midbody (Khan, 1998), while the remaining new species belong to the 18-midbody-scales group. *Typhlops porrectus* Stoliczka (1871) which has long been included in Pakistani herpetofauna, is found to be an extralimital species confined to the eastern Himalayas, and the snakes long confused as *T. porrectus* from Pakistan (Minton, 1962, 1966; Mertens, 1969; Khan, 1982, 1993; Khan and Khan, 1996) are now recognized as a new taxon, *T. ductuliformes* Khan (1999b).

Short Descriptions of New Species

Typhlops diardii platyventris Khan, 1998

Typhlops diardi platyventris Khan, Pakistan J. Zoology 30: 213-221.

Type locality: Goi Madan, District Kotli, Azad Kashmir, 33°30′N and 74°00′E, elevation 1315 m.

Diagnosis: Stout body, distinctly flat ventrum; 22–25 scales round the midbody; head flat, wider than body, tail at vent wider than long; eyes large with a distinct pupil; nasal cleft incomplete, a large subnarial glandular pit, nasal cleft in contact with second supralabial; squamous glands confined to sutures of head scales, descend in parallel diagonal rows onto supralabials. Microtubercles are scattered on all head scales.

Supralabial imbrication pattern (see Wallach [1993]): N1/SL1, N2/SL2/PrOc, PrOc/SL3/Oc, Oc/SL4.

Color: Dorsum light brown, ventrum dirty white; tail with sharp ventrad bend, ending in a strong cuspidate spine.

Range: Known from southern Azad Kashmir.

Typhlops madgemintonae Khan, 1999

Typhlops madgemintoni Khan, Russian J. Herpetol. 6(3):233.

Type locality: from under vegetation near a torrent, Goi Madan, District Kotli, Azad Kashmir, 33°30′N and 74°00′E, elevation 1315 m.

Diagnosis: Completely divided nasal scale; middorsals 336–364; tail ends in a cone, a cuspidate spine absent. Micropits present on dorsal surface of body scales. The squamous glands are confined to the sutures of the head scales, disposed in more or less diagonal lines; there is no glandular line on SL4. The ocular-preocular line forms a distinct ocular bend lodging the eye. Surface of the body scales pitted.

Supralabial imbrication pattern: N1/SL1, N2/SL2/PrOc, PrOc/SL3/Oc, Oc+ PtOc/SL4

Color: (in formalin) uniform dark brown dorsum, light brown ventrum. Snout, labia, circumanal and subcaudal region colorless. The subcaudal colorless area extends dorsally to include terminal cone.

Taxonomic note: Wallach (2000) corrected the trivial name *madgemintoni* to *madgemintonae* (citing I.C.Z.N., 1985).

Range: Known from type locality only.

Typhlops madgemintonae shermanai Khan, 1999

Typhlops madgemintoni shermanai Khan, Russian J. Herpetol. 6(3):236.

Type locality: From under leaf litter, at the roots of a pine tree, west of Charnali village about 2 km W of Goi Madan, District Kotli, Azad Kashmir, 33°30′N and 74°00′E, elevation 1320 m.

Diagnosis: Supranasal suture 50% complete; naris round; a subnarial pit in the inferior nasal suture; preocular and ocular scales subequal; a row of thick squamous glands along slightly curved preoculo-nasal suture.

Range: *T. m. shermanai* reaches northwestern Punjab, Pakistan. Generally blind snakes are known to be good swimmers; they swim long distances in floodwaters (Khan, 1980). Floodwater in the Chenab River washes down around Rabwah, and might have carried these montane specimens to their present locality in Punjab, Pakistan.

Typhlops ahsanuli Khan, 1999

Typhlops ahsanai Khan, Russian J. Herpetol. 6(3):238.

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Type locality: From under pile of stones, along a torrent, Nadari village, 2 km E of Goi Madan, District Kotli, Azad Kashmir, 33°30′N and 74°00′E, elevation 1315 m, 17 July 1993, collector Muhammad Sharif Khan.

Diagnosis: Has 75% complete supranasal suture; N1 overlaps SL1 and anterior ventral part of N2 which is deeply scalloped behind so that preocular scale extends deep in the postnasal concavity; preocular larger than ocular; the preoculo-nasal suture studded with thick squamous glands; preocular in contact with SL3; N2 in contact with SL2 and SL3.

Supralabial imbrication pattern: N1/SL2, N2/SL2/PrOc, PrOc/SL3/Oc, Oc+ PtOc/SL4.

Taxonomic note: Wallach (2000) changed the trivial name *ahsanai* to *ahsanuli* (citing I.C.Z.N., 1985).

Range: Known to date only from type locality.

Typhlops ductuliformes Khan, 1999

Typhlops ductuliformes Khan, Pakistan J. Zoology 31(4):385

Type locality: From a grassy plot, Jhangir Tomb, Lahore, Pakistan.

Diagnosis: Hardly apparent eyes, tail ends in a cone; deeply scalloped posterior nasal, unpigmented circumanal and subcaudal area; few anterior scales in the middorsal row, distinctly enlarged; surface of body scales striated; ocular overlaps SL4 which overlaps postocular, rostral depressed, with uniform diameter all along its length; body diameter 1.4–1.9 mm, total length 90–202 mm, middorsals 412–461.

Supralabial imbrication formula: N1/SL1, N2/SL2/PrOc, PrOc/SL3/Oc, PtOc/SL4.

Color: Dorsum light chocolate, ventrum dirty white; basal exposed parts of body scales are dark brown and distinctly marked off by a dark brown line from the light chocolate flared parts of the scales. The surfaces of the flared parts of the scales bear longitudinal microstriations. Rostral, labials, gular and throat region lighter. Circumanal and subcaudal regions unpigmented.

Range: Indus Valley, Pakistan.

Discussion

Blind snakes, despite their apparent restricted locomotion and specialized habits, are almost universal in distribution. Recently, the Southeast Asian blind snake *Typhlops diardii* has been discovered from Azad Kashmir in the western Himalayas, almost 1000 km northwest of its known range in the eastern Himalayas (Khan, 1998; Khan and Khan, 1996).

There is a large group of typhlopid snakes with 18 midbody scales that have been described from throughout the Indo-Pakistan subcontinent (see Khan 1999b for list), which makes taxonomy of 18 midbody scaled typhlopids confusing. However, the following key is sufficient to diagnose Pakistani species.

Key for identification of typhlopids from the western Himalayas

1. Midbody diameter rarely exceeds 2 mm ---------- 2
   Midbody diameter exceeds 2 mm ----------3
2. Scale rows along middorsum of body 389 ------ *T. filiformis*
   Scale rows along middorsum of body 412–461 ---
   ----------*T. ductuliformes*
3. Body diameter exceeds 5 mm --------- *T. diardii platyventris*
   Body diameter does not exceed 4 mm ---------- 4
4. Nasal completely divided ---------- *T. madgemintonae*
   Nasal incompletely divided ----------5
5. Middorsals 400 or more ----------6
   Middorsals less than 400 ----------7
6. Posterior nasal scale deeply scalloped ---------- *T. meszoelyi*
   Postnasal not scalloped ----------*T. loveridgei*
7. Preocular in contact with third supralabial only - *T. ahsanuli*
   Preocular in contact with 3rd and 4th supralabials ---
   ---------- *T. madgemintonae shermanai*

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Notes on the Reproductive Biology of Two Species of Western Australian Skinks, *Egernia inornata* and *Egernia striata* (Squamata: Scincidae)

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Abstract

Histological analyses were conducted on reproductive organs from museum samples of two Australian skink species, *Egernia inornata* and *Egernia striata* from Western Australia. A prolonged period of reproduction is confirmed for *E. inornata*. Females with enlarged ovarian follicles (> 4 mm length) were recorded from September and January. Males undergoing spermiogenesis were found from January, May, September, November and December. Testicular recrudescence (renewal) occurred in February–May. *Egernia striata* females were reproductively active October–December, January. Males from January–March, December had regressed testes. One male from October exhibited late spermiogenesis suggesting breeding occurred earlier in the year.

The desert skink, *Egernia inornata* is widely distributed through the southern half of Western Australia, South Australia and lower Northern Territory to western Queensland, western New South Wales and northwestern Victoria; the night skink, *Egernia striata*, occurs through the interior of Western Australia to southwestern Northern Territory and northwestern South Australia (Cogger, 2000). Previous information on reproduction of *E. inornata* and *E. striata* is in Pianka (1986) and Pianka and Giles (1982). Members of the genus *Egernia* are viviparous and usually produce broods of six or fewer (Cogger, 2000). The purpose of this note is to add additional information on the reproductive biology of *E. inornata* and *E. striata* from a histological examination of museum specimens.

Thirty-three *E. inornata* (15 females, $\bar{x} = 71 \pm 6$ mm snout–vent length [SVL], range = 60–80 mm; 18 males, $\bar{x} = 70 \pm 6$ mm SVL, range = 58–83 mm) from Western Australia were examined from the herpetology collection of the Natural History Museum of Los Angeles County, LACM, Los Angeles, California. Specimens were collected: December 1966 (LACM 56434); January 1967 (56465, 56466); February 1967 (56436); March 1967 (56438, 56469, 56484, 56490, 56496, 56497); May 1967 (56440; 56444; 56448-56452; 56455; 56457; 56491; 56500; 56501; 56502; 56507); September 1967 (56462-56464); October 1967 (56442, 56487); November 1967 (56477, 56478); January 1968 (56443, 56509).

Forty-three *E. striata* (26 females, $\bar{x} = 95 \pm 8$ mm SVL, range = 83–112 mm; 17 males, $\bar{x} = 97 \pm 6$ mm SVL, range = 83–108 mm) from Western Australia were also examined from LACM. Specimens were collected: December 1966 (56614, 56615); January 1967 (56583, 56587, 56591-56593, 56595, 56603, 56604, 56606); February 1967 (56513-56517, 56521, 56523, 56525, 56530, 56532, 56535-56537, 56539, 56541); March 1967 (56548, 56557, 56607); October 1967 (56617-56621); December 1967 (56609, 56611, 56623, 56625); January 1968 (56630, 56632, 56634, 56635, 56637).

Egernia inornata were collected between 27°29′S to 28°43′S and 118°38′E to 125°50′E; *E. striata* were collected between 26°17′S to 28°28′S and 121°00′E to 130°53′E, Western Australia, by Eric R. Pianka. Data from these are in Pianka (1986). Gonads were dehydrated in ethanol, embedded in paraffin, sectioned at 5 µm and stained with Harris hematoxylin followed by eosin counterstain. Enlarged ovarian follicles (>4 mm width) were counted; no histology was done

on them. Oviductal eggs were previously removed by Pianka (1986) so the prevalence of oviductal females in my samples of *E. inornata* and *E. striata* may have been lower than in natural populations. Male and female mean body sizes (SVL) were compared with an unpaired *t* test using Instat (vers. 3.0b, Graphpad Software, San Diego, CA).

There was no significant size difference between *E. inornata* male versus female mean body sizes (unpaired *t* test, $t = 0.58$, $df = 31$, $P = 0.566$). Females from the following monthly samples contained ovarian follicles which were inactive (no yolk deposition in progress); October (1); January (1); March (3); May (3). Two females; May (1); September (1) exhibited early yolk deposition (ring of vitellogenic yolk granules on periphery of follicles). Three females exhibited corpora lutea (proof of ovulation) on the ovaries: March (1); October (1); November (1). No concomitant yolk deposition was in progress which would have indicated more than one brood is produced in the same reproductive season. Two females contained enlarging follicles (> 4 mm length); September (two follicles); January (follicles squashed and could not be counted). The above indicated females are reproductively active during the months: January, March, May, September–November. The smallest reproductively active female (early yolk deposition) measured 65 mm SVL and was from September.

One male *E. inornata* with a regressed testis (seminiferous tubules contained predominantly spermatogonia and Sertoli cells) was from March. Males with testes undergoing recrudescence (renewal of germinal epithelium characterized by proliferation of primary and secondary spermatocytes and spermatids, but no sperm) were from: February (1); March (1); May (4). Testes exhibiting early spermiogenesis (1–2 rows of metamorphosing spermatids and spermatozoa in select areas of the seminiferous tubules) were from May (4). Testes undergoing spermiogenesis (several rows of metamorphosing spermatids and resulting spermatozoa widely distributed in the seminiferous tubules) were from: January (2); May (3); September (1); November (1); December (1). Epididymides contained sperm. The smallest reproductively active male (spermiogenesis) measured 65 mm SVL and was from January.

Pianka and Giles (1982) and Pianka (1986) reported a mean of 2.1 from 4 and 32 litters of *E. inornata*, respectively. Pianka and Giles (1982) reported the period of reproduction in *E. inornata* appeared to be prolonged as it encompassed late September through early May with two litters being possible. I also found one female each, with enlarged yolk-filled ovarian follicles from September and January, similarly indicating a prolonged period in which yolk deposition occurred. Moreover, my findings of spermiogenic males from January, May, September, November, December also confirm a long reproductive season. The occurrence of a male with a regressed testis from March and males undergoing recrudescence (renewal of germinal epithelium for the next period of spermiogenesis) from February, March and May suggests the testicular cycle ends in late summer.

There was no significant size difference between *E. striata* male versus female mean body sizes (unpaired *t* test, $t = 0.99$, $df = 41$, $P = 0.33$). Females from the following monthly samples contained ovarian follicles which were inactive (no yolk deposition in progress); January (6); February (8); March (2); October (1); December (1). Six females exhibited corpora lutea: October (3); December (3). No concomitant yolk deposition was in progress which would have indicated more than one brood is produced in the same reproductive season. One female from November contained squashed enlarged follicles (> 4 mm length) which could not be counted. One female from February contained one oviductal egg. The smallest reproductively active female (corpora lutea present) measured 89 mm SVL and was from October.

Males from the following months contained regressed testes: January (8); February (6); March (1); December (1). One male from October was in late spermiogenesis (germinal epithelium was depleted with small quantities of sperm being produced; epididymides contained sperm). This male measured 94 mm SVL.

Pianka and Giles (1982) reported gravid *E. striata* with full-term embryos were found from late October through mid-January with a peak in December. Mean litter sizes for *E. striata* were 2.6 for 4 (Pianka and Giles, 1982) and 2.7 ± 1.9 SD for 19 (Pianka, 1986). Because monthly samples of males were not available from all months, one cannot identify the period of spermiogenesis. Nevertheless, the presence of an October male undergoing late spermiogenesis would suggest it occurs prior to that month.

Subsequent analyses of additional monthly samples of *E. inornata* and *E. striata* are needed to ascertain additional information on the reproductive biology of these two species.

Acknowledgment

I thank Christine Thacker (LACM) for permission to examine *E. inornata* and *E. striata*.

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Herping in Australia—Field Notes and More
Part 4: Hoppos

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What Is a Hoppo?

Hoppos are what we Aussies call our broad-headed snakes (*Hoplocephalus bungaroides*), although the term hoppo is often applied to the other species in the same genus, namely the Stephen's banded snake (*Hoplocephalus stephensii*) and the pale-headed snake (*Hoplocephalus bitorquatus*).

Sydney is without doubt the best place in the world to live if you have an interest in these snakes, as one species, *H. bungaroides* is only found within a 300 km radius of the city, while the other two occur within 80 km to the north (and northward from there).

Most non-Australians would not be familiar with these snakes, so a brief description is on order. They are elapids and hence are venomous. Not only that, but they have one heck of an attitude on them—they just love to bite! Personally I think they are snappy little you-know-what's but for some obscure reason they are generally highly regarded here and sought after as pets. Part of this may be the general perception that they are "rare." Not only don't I subscribe to this, but experience on my part has shown these snakes to among the easier to find and locate if one goes specifically hunting for them in the right place and time.

Hoppos all grow to about a meter in length (I am always skeptical of larger measurements attributed to these species), and are of relatively slender build, with a fairly large head, well separated from the neck.

Broad-headed snakes are typically black in color dorsally with yellow spots across the body, forming a sort of pattern (unlike the pattern found in the similar looking diamond pythons). Ventrally they are a leadish black, which along with the lack of labial pits, distinguishes the species from the harmless (and usually larger) diamond pythons (*Morelia spilota*). Broad-headed snakes are found south of Sydney Harbour, and although historically found in the eastern suburbs of Bondi, Randwick and the like, have long since disappeared from these areas in the wake of the urbanization that has occurred. They are now found in a broad arc from the northwestern extremity of the Blue Mountains, down through Mittagong and across to the coast, where habitat permits, in an area stretching from Bundena (Royal National Park), south to about Nowra. The habitat for the species is sandstone escarpment country.

Because the broad-headed snake is absent from Sydney's northern suburbs and northern national parks and relatively uncommon in the national parks to the immediate south (Royal and Heathcote), there is a general perception that the species is rare. This has been fostered in many texts over the last 150 years. However the species remains common where suitable habitat occurs in the mid to upper Blue Mountains (at least as far west Capertee Valley), as well as other areas near Mittagong and in the Warragamba Dam catchment, and likewise in the sandstone country to the west of Kiama and Nowra, on the New South Wales South Coast. All up this is a massive area, most of which is preserved in perpetuity in national parks. Due to the rugged and relatively inaccessible terrain throughout much of this area, the species remains safe throughout most of its known range.

Add to that the fact that the species has remained in heavily collected parts of the Royal and Heathcote National Parks, which have also regularly been decimated by severe deliberately lit bushfires, and one can only conclude that the species is far more secure than previously mooted.

Now I had lived in Sydney for many years before I'd ever caught a broad-headed snake. In fact, had none of my friends had an interest in the species, I'd probably never have ever caught any!

My first encounter with the species was at Capertee Valley, which is an area about two hours drive northwest of Sydney. This is near the outermost extremity of the sandstone part of the Great Dividing Range, northwest of Sydney. And don't believe what others may say about the species also living in non-sandstone habitats. It just ain't so. The closest one will get is when they are found in conglomerate hills. The catch is that the conglomerate is sandstone-based and on the periphery of a sandstone area.

I recall the day well. It was a rainy day in May and myself and others were scaling a large hillside in search of reptiles. The hillside was dotted with large fallen boulders, which in turn had exfoliating sandstone slabs on them. These formed the classic rock-on-rock situation almost all Sydney reptiles like. We had found dozens of Lesueur's geckos (*Oedura lesueurii*), which we knew to be the principal food source of this snake. One of my friends and I climbed a large rocky knoll to lift some rocks at the top. Under the rocks I lifted I found several more geckos. My friend found a broad-headed snake. True to form, it wanted to kill him!

As it happened, we never even got to the top of the hill, which was where the best habitat for broad-headed snakes was. This was where there was a continuous long cliff-face and ridge running along the entire contour of the hill. However friends of mine that revisited the area at a later date found numerous broad-headed snakes at the top of the escarpment.

My next encounter with the species was early one morning in July. Again, I recall the day well. You see I'd been working the previous night driving a taxi in and out of Sydney's Kings Cross. After finishing a 12-hour shift at 3 A.M. I drove to a fellow herper's house. Charles Acheson (another one of

those strange people who actually liked hoppos) then drove us from his Peakhurst home to Linden in the middle Blue Mountains. It is between 300 and 400 meters above sea level and is about where the warmer, lower Blue Mountains tend a little bit higher towards the colder, upper Blue Mountains (at just over 900 meters to 1200 meters). Over the years there have been dozens of hoppos taken from Linden and yet, they still survive in reasonable numbers. The area we went to was to the north of the main township.

Now I had never been here before, but the first thing that impressed me (if that's the correct word) was the huge number of smashed rocks all over the place. Clearly this area had been herped to bits, and the thought that any reptiles would survive this onslaught seemed at first surprising. We walked a few kilometers along a track before moving off into the bush itself and towards the rocky ridges and escarpment. While it was clear that rocks had been moved before, we commenced our search for reptiles.

As we moved on, we eventually came to an area that appeared to be pristine bushland and that seemingly hadn't been collected in before. Now before going on to detail what we found, I should properly set the scene. I was by now a walking zombie, having been awake continually since the previous day's morning. The sun had only just risen and it was about 7 A.M. The air temperature was a crisp 4°C. The air was clear and the sky above was one of those skies you only see in Sydney's Blue Mountains in winter. To the west there was a total cloud cover. It was as dark as clouds come. No doubt at places like Katoomba and Blackheath just 20 minutes drive away, there'd be fog and driving rain.

Yet towards Sydney the sky was clear and cloudless. As the steady west wind blew the clouds over the lower Blue Mountains they were breaking up almost directly overhead. This was a pattern that'd continue for the whole day. And while the wind was icy and cold, we had the morning sun hitting us. We weren't cold, because we'd been walking and lifting cover. Added to that the smell of Sydney's beautiful native plants and even though I was totally worn out, it was all quite a buzz being immersed in all this beauty.

Even for someone like myself who has been through Sydney's bushland on countless occasions, the fact remains that in its most pristine state, Sydney's bushland remains one of the most beautiful in the world. The sandstone rocks, the stunted native plants, growing on the sandy loamy soil, and the carpets of winter flowers are all something everyone should experience at least once in their life. Especially if a decent dose of herping is added!

As we lifted the rocks on the outcrops, we started to find everything the broad-headed snake hunt script called for. Yes, we found the Lesueur's geckos. Lots in fact!

I caught five small-eyed snakes (*Rhinoplocephalus nigrescens*), but Charles found none. Why? Here's the reason. Charles wasn't stupid. He wanted the broad-headed snakes. He scampered ahead of me lifting the outermost rocks on the ridges and only those that were obviously rock-on-rock. He ignored everything else, because he knew they'd never have any broad-headed snakes under them.

However some of those "other" rocks looked so good, I just had to lift them. And yes, that's why I was finding the small-eyed snakes, and the copper-tailed skinks (*Ctenotus taeniolatus*). Quite appropriately I found three Blue-Mountains treefrogs (*Litoria citropa*) under three separate rocks, and quite some distance from any watercourses.

I say appropriately, because we were in the Blue Mountains! These frogs occur throughout Sydney, but it is rare to find more than one or two at a time as they don't seem to occur in the high densities typical of most other frog species. They are also perhaps one of the most beautiful frog species in Australia. I won't try to describe the color of the frog, save for a simple direction to check out a photo of the species. (Around Sydney I've found most Blue-Mountains treefrogs in the area between Waterfall and Darkes Forest, to the south of the city, the latter place being the only area I've been able to find the species on call, where they hide by day in sandstone crevices immediately above the waterline in local creeks).

However we never found any broad-headed snakes after a few hours of hunting and so we started to make our way back. Returning to our car, I saw a single large rock that had somehow been missed earlier and so I lifted it. It had been situated on the edge of a cliff and I accidentally dragged the rock on the underside as I lifted it. Sure enough, I dragged an adult broad-headed snake with it. The net result was yet another smashed up rock (I hate to admit this) and an injured broad-headed snake (I also hate to admit this). The snake's intestine had been put through the outer skin and was literally hanging loose.

We raced back to Charles's house as fast as we could. In fact it was the only time I'd ever seen the normally sedate Charles Acheson drive like a Formula One driver. Within an hour and half we were operating on the snake, or should I say Charles was. Struggling to stay awake, I held the snake while Charles attempted to stitch it together.

Now stitching any injured snake together isn't easy. Stitching together a 70 cm broad-headed snake that just wants to kill you is even worse! After what seemed an eternity, Charles finally managed to put the snake together, or at least as best he could. The success of the operation was later judged by the fact that the snake ended up becoming one of his long-term captives.

We went on other hoppo trips after this. These were to a place called Yalwal on the eastern edge of the sandstone escarpment south of Sydney (near Nowra). The script was much the same as above, although, it was Charles who generally caught the broad-headed snakes and I the small-eyed snakes. And yes, the ratio was about four small-eyed snakes found to every broad-headed snake.

The place is essentially similar in habitat and herp species to what we found at Linden. The main difference being that because we went up dirt roads and used a four-wheel drive to get to more inaccessible places, the habitat was even more pristine.

And perhaps I should also make mention of what happened to all these broad-headed snakes. This was back in the dark days when you couldn't legally trade reptiles in New South Wales. I had no interest in them, so I never kept them. Charles had a core stock of about 6 snakes and he ended up breeding them.

He gave a few other keepers snakes and meanwhile his own snakes kept on breeding. You see they breed, er well, like broad-headed snakes! In the end he had to take specimens back into the bush and release them.

He ended up releasing far more than he ever took from the bush. And yes, Charles was also smart enough to only release those snakes back to the areas that they actually derived from.

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Herping in Australia—Field Notes and More
Part 5: Sydney's Roads by Night

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Road Hunting—For the Brain Dead Herper?

Now when it comes to finding herps in the bush there is generally assumed to be a certain level of skill. All herpers tend to know those who are just "good" at finding critters in the bush and then there are those who just seem to be unable to find anything.

Notwithstanding the lucky finds that one stumbles upon, the above is simply the plain truth. Some are good at finding stuff, others are plain hopeless. I recall walking with a friend along a track just east of Engadine Railway Station, (the drag-on spot I've told you about before) when my friend (in the lead) walked up to and trod on a large swamp snake (*Hemiaspis signata*). I had assumed he'd seen it before then, but he'd been so blind and stupid that he trod on it!

The snake was also blind and stupid, or so it seemed as it never even attempted to bite him, even after it was trodden on. My friend (no longer?) had stepped so hard, that he had split open the side of the snake to yield 15 babies. All snakes were effectively killed immediately.

I recall a similar incident involving another colleague (?), who when walking through bush at Belrose in Sydney's north, trod on a 1.3 meter red-bellied black snake (*Pseudechis porphyriacus*), and slit its side open. Once again the snake never attempted to bite him. Now for those who don't know, this is said to be one of those mean and dangerous species!

Night driving on the other hand doesn't really fit the same bill as day hunting for herps. You'd think that any idiot can drive along a road and see the critters that cross it. Not so.

Of course there's the basic skill in picking your nights. For example, you don't go night driving when it's snowing! But most herpers are smart enough to work out that hot weather means go night driving. Around Sydney that's the general rule of thumb anyway, and even idiots can work that one out. And while the moon usually scares the living daylights out of most reptiles, there's always a few young and stupid snakes silly enough to break this rule.

Sydney's also blessed with a few "black and white" species, which tend to ignore the moon and not be put off by it. These are the diamond python, the broad-headed snake and the bandy bandy (*Vermicella annulata*). I can only guess that the black and white/yellow markings of these snakes makes them difficult to see or capture in the moonlight in terms of potential predators. However some herpers really are blind.

Back in the late 1970s, once the word got out that I was able to find death adders (*Acanthophis antarcticus*), diamond pythons and other sought-after critters by cruising up and down West Head Road, just north of Sydney, the road soon became nearly as busy on hot nights as the Santa Monica freeway in L.A. Okay, not quite, but I'm sure you get the gist. Put it this way, I recall pulling up once to talk with a fellow herper along the side of the West Head Road, and before long there was line of 18 parked cars, all containing herpers looking for snakes.

I recall that night well as I shot through and drove the Cottage Point Road, leaving the others to get in each other's way on West Head Road. My decision was vindicated when I caught three snakes and the others found none, although there was obviously a strong element of luck involved as experience shows the two roads to be similar in terms of yield.

Now for those who don't know, West Head Road is in Kurringai Chase to Sydney's north. It is a dead-end road. In other words if you drive down it, you must drive back. Other adjacent roads that also run through the same national park are McCarr's Creek Road, Coal and Candle Creek Road, General San Martin Drive and Cottage Point Road.

Anyway, I drove to the end of West Head Road one night and started heading back. A friend of mine approached in his car from the opposite direction. We pulled up to one another and I asked him if he'd seen anything to which he said "No." We parted. As I turned around a bend I saw a small diamond python with its head squashed against the road. He'd been blind and run it over!

Another time I was with a Scottish mate in his car and he

was driving. I screamed out "Stop, Burton's." To which he replied "Where" as he ran it over and squashed it. Over two decades of night driving for herps has given me some expertise (I'll claim this anyway) and I don't mind sharing some of that here.

I've shocked quite a few colleagues when driving for herps by sometimes aiming the car for the reptile. No, I'm not trying to hit them, but sometimes if one sees the reptile too late to swerve around it, then it's better to go directly over it and make sure that the wheels don't hit. Horses for courses they say.

And yes, I've run things over, although, to date I've never hit a snake. I've had lizards and mammals run under the car to be killed, when there was nothing I could do to avoid the inevitable. And as for frogs, well, anyone whose driven down Hidden Valley at Ourimbah (about 80 km north of Sydney) in search of frogs cannot but help to clean up some of the thousands of frogs that cross the roads up there.

Anyway, compared to other forms of collecting, you don't as a matter of course need to exercise a huge amount of brain-power when driving roads at night in search of herps. If you drive the right roads often enough, you can't help but catch herps!

But some people do make it hard for themselves. I recall a colleague of mine who'd been reading one of my papers about collecting in the Pilbara of Western Australia. One night he rang me. I won't tell you who it was, so we'll just call him "Bob." He told me he'd been driving the road from Sandfire Flat to Port Hedland and found nothing. I asked him for more details.

Yes, the time of year was okay. It was early February. I asked him about the weather. It too was perfect. Hot and sunny, but not too hot. Low thirties by day, high twenties at night . . . just nice for up there. Then I looked out the window of my Melbourne house. A huge great moon was staring me in the face. That was the answer. The moon was scaring the living daylights out of all the snakes. That's why nothing was crossing the roads.

And so my mate had gone all the way from Sydney to Western Australia just to find nothing. He learnt his lesson and since made many successful trips to the area, even being fortunate enough to legalize his numerous illegally caught critters in a New South Wales National Parks and Wildlife Service amnesty. He made a paper profit of a few hundred thousand dollars on his illegal collecting. Who said crime doesn't pay?

And for those who don't know, the moon is the same everywhere. By this I mean if it's going to be a full moon (or near enough to it) in Australia tonight, it'll be the effectively same thing in the USA, UK and everywhere else on planet earth the same day.

For snakes, any moon in the sky will scare them off, even a quarter moon! The moon rises and sets about 50 minutes later every night. Thus, for all things being equal, you want to avoid the period from about two weeks before the full moon (pre-full moon) to a few of days after the full moon, which coincides with when a moon is in the sky at dusk and shortly thereafter.

In the tropics when nearly every night at the right time of year is probably warm enough for night driving, this means you plan your collecting trips around the phases of the moon. In Sydney, it simply means that most good night driving nights are in the fortnight when the moon is not around at dusk. Now if you have a moon in the sky that is covered by cloud, that is as good, if not better than no moon at all, but if the moon isn't covered by the cloud (as in high cloud) and the moonlight still shines through effectively unimpeded, you are back to square one and the cloud may as well not be there.

In Sydney's context, the best snake nights are those when the weather is hot (above average), in the period from November to early March. An approaching front also tends to keep temperatures up (especially at night) and the falling air pressure will in its own right further stimulate snake activity. Wind is not normally a factor to consider (especially as winds tend to drop at night and are weakest at ground level), but high winds are usually not good for herps.

And so in Sydney, the best nights for snake hunting are hot nights with falling air pressure and no moon during the warmer months. And the best time is the period up to midnight.

Now that you know how best to find herps around Sydney, let me give you the legal drag on things: Look but don't touch!

Incidents around the West Head Area

I will let you in on one of my funniest, one of my saddest and one of my proudest moments.

The first case was on 24 December 1978. Christmas Eve to be exact. Now to fill you in on the full picture I should tell you that Sydney's weather is fairly predictable once you've lived there for a while. Every night on the TV screen you see a large weather map which tells you where the fronts are and over a week or so, you can actually watch them make their way across Australia, starting at Perth and then making their way through Adelaide, then Melbourne and eventually Sydney. You are well and truly aware of this because of the way the temperatures go up in each city before the front's arrival, only to be chopped back the day after.

Now sure there are other variables, but the pattern is usually fairly consistent. Large high-pressure cells, which average about a week to pass, punctuated by cold fronts. The weather warms progressively as the highs move across and then when the front hits there is a sharp drop in temperature. And even back in 1978 I was fairly wise to all this.

Now back then I wasn't legally able to drive because I was too young, so I had to try to talk my parents into driving me to West Head to look for death adders, and that was about as difficult as extracting teeth. After all, what sort of parent would want to take their son on a wild goose chase in search of deadly snakes?

Now my parents were actually pretty good most of the time, but this time I wasn't having success in convincing them to take

me night driving in search of snakes. Oh, and how I despaired as I saw a huge great cold front edging its way across Australia, which to my mind just stank of death adder.

Using a bit of lateral thinking I decided to take a punt that the front would hit Sydney on the evening of 24 December or perhaps early the next day. The lateral thinking part involved me getting my parents out of the house in one car, so that I could take the other car and go to West Head in search of death adders.

So a few days earlier I managed to talk some friends of theirs to invite them to a church that night. As soon as my parents walked out the door and drove off, I did the same . . . but in an opposite direction. They went south from St. Ives to Chatswood; I went north to West Head.

Being unable to drive and having at that stage done nothing more than closely observe my father, as well as asking him some judicial questions about changing gears, I had some difficulty in driving off. Yes, I crashed gears and the like, but somehow managed to get the car off to West Head Road in search of death adders. It was all a big punt as at that stage, I'd never been there in my life!

I did one lap of the road and found nothing, but on the way back, on Coal and Candle Creek Road, I saw a subadult gray female (43.5 cm total length) on the road. I braked and skidded (stalled the car of course) and jumped out and grabbed the snake. As I got back in the car to drive off, about 20 people in the nude ran out towards me. They'd obviously thought that I'd ruined their party. Thankfully I escaped their wrath.

Just so you know the exact time the snake was caught, it was at 8:55 P.M., which is just as the last of the daylight fades. And yes, from later experience, this is definitely one of the best times to find young and subadult death adders moving about in the West Head area.

I made it home just minutes before my parents and they were none the wiser for many years thereafter. That in itself was strange but my mother was too absent-minded to realize that *someone* must have emptied the car's petrol tank!

And for the record the cold front hit Sydney in the early afternoon the next day.

Just to make things clear, the snake catching part was legal . . I had a license for that. The driving part wasn't! I didn't have a license for that!

The second case was in February 1979, when I managed to convince my father to go on a night drive to west Head in search of death adders. It was a classic situation. Daytime city maximum of 38°C and a front rapidly approaching. Besides the heat, the high cloud formations, so typical of an approaching front also give the game away.

It was dusk as we drove along the beginning of West Head Road. Because I theoretically couldn't drive, nor was I licensed to, it was my dad at the wheel. Sure enough, we soon saw a young red male death adder crossing the road (at a place now known as *Heleioporus* Hill). My dad pulled over, but before I could get out and grab the snake another car came flying up the rear and ran it over.

Within minutes the cold front hit, and within half an hour it was all over. The temperature had dropped by more than ten degrees Celsius, it was now cold and there was rain. There were to be no death adders . . . except a corpse that is.

The third case I want to recall began on 12 January 1982 at 9:13 P.M. to be exact. I was cruising along General San Martin Drive (Kurringai Chase), when I saw a subadult death adder in the middle of the road.

Unlike many of my colleagues (or for that matter my father) who pull over before getting out of the car to grab the reptile, I had learnt early from my previously given experience to simply hit the anchors and stop where the snake is—preferably almost on top of it, literally protecting the snake with the car.

And yes I was parked in the middle of the road and almost on top of the snake. The car at my tail nearly went into my car's rear when I braked suddenly and the car approaching swerved onto the dirt to avoid a head-on collision with my car that was by now sitting across the center of a relatively narrow stretch of road.

Within seconds I was out of the car and had the snake in a bag. The other motorists hurled abuse at me for driving like an idiot. But I simply ignored them as I got back into my car happy in the satisfaction of knowing that had I not braked and stopped when I did, this snake would have been yet another casualty of the road.

The snake, a 53.5 cm subadult gray female, became part of a breeding colony and produced her first young on 24 February 1984 (15 live, 12 dead and unfertilized eggs), with most of them being returned to the wild.

Having related the above account, I can recall many similar ones if need be—that is, saving snake's lives by braking and stopping almost on top of them, instead of pulling to the side of the road. Suffice to say that as a rule, when hunting for herps on busy roads, I tend to put the herp first and the car second. And so far I've never had my car hit when parked across the middle of the road and grabbing a snake.

The Blocking of West Head Road

Now I've driven the roads in Kurringai Chase (West Head, Cottage Point, Bobbin Head, etc) on many dozens of nights and have seen all the nocturnal reptile species that occur there. The animals collected from these roads by herpers pales into insignificance compared to those killed by other motorists and the good news is that in over 20 years I have seen no changes in species numbers or diversity in the area. And that even includes frogs!

Put simply, the taxing of fauna from the roads is nothing compared to that from other sources and the reptile and frog populations simply tolerate it without discernible change. However, the National Parks and Wildlife Service (NPWS) didn't see things that way in the early 1990s.

Following publication of a number of papers by myself in the early 1980s and then my book *Australian Reptiles and*

Frogs in 1989, West Head Road became a bit of a Mecca for reptile collectors. And being part of a national park, any collecting of herps was strictly forbidden! (and for the record, I collected there under several scientific licenses from NPWS in the 1970s and 1980s).

The NPWS installed a gate at the entrance to West Head Road and put up a large warning sign advising that the National Park and gates would be closed at dusk. The sign remains there as of 2002.

Now back in the 1990s the NPWS enforced this. Some keen herpers came along with bolt cutters and made their way in anyway, but the NPWS people simply followed them in. With West Head Road being a dead end, they were sitting ducks to be caught and so they were. And so for most of the early 1990s West Head Road was cut off from herpers as a good road to go to at night in search of herps.

However it wasn't all clear sailing for the NPWS people. You see being a scenic place and a quiet bush retreat, West Head has also become one of Sydney's better-known lover's lanes. I know! That's where my wife and I tried to conceive our first child (the appropriately named Adelyn—pronounced adder lynn), who was born on 19 May 1999.

What invariably happened is that people would take a drive to West Head, spend some time in the bush and forget about the gate and the sign. As a result they'd end up getting stuck in the middle of the bush and with no means to get out. To walk to the nearest houses (or phones) by road (Terry Hills or Church Point) takes a good hour, and that's assuming one knows the quickest way. Thus the NPWS were inundated with irate members of the public complaining about being locked in a national park against their will.

After countless representations to NPWS by many people who'd spent the night camping by the locked gate in their cars the NPWS decided not to bother closing the gate at night. This was around about the mid to late 1990s. Then the NPWS started to simply follow the herpers into the park and bust them as they drove out from West Head.

The theory was that the rangers would simply pull up the cars driving out of the national park and do a search. If they found anything, the person was simply busted. Simple eh? Not so. You see the NPWS people drove large clunky four-wheel drives and the snake catchers were in ordinary cars, which invariably went a lot faster.

And so there were lots of high-speed car chases out of Kurringai Chase and numerous cars went over drops on the hairpin bends leading up McCarr's Creek Road (the way into or out from West Head Road). The State Police were even brought in for a while as part of the anti-herper blitz on West Head Road, but in the end, everyone simply gave up.

You see besides the West Head Road, there are other bush roads running through Kurringai Chase National Park. These include the Cottage Point Road, Coal and Candle Creek Road, General San Martin Drive and Bobbin Head Road. The reason none of these could be blocked off like West Head Road was because all were "through roads" linking to residential areas. Thus the NPWS couldn't summarily place gates across and block the roads, or simply assume that every car on the road was a herper's.

Now none of these other roads are as good for herping as West Head Road, because of the fact that at night they get the through traffic, which invariably runs over the critters before a herper can get to them. However, when West Head Road became unavailable, herpers took to these other roads and started to find critters. Then there were other roads outside of Kurringai Chase, like the Old Pacific Highway, between Cowan and Somersby, which had the same herpetofauna as West Head Road, *Heleioporus* frogs included!

And then following publication of the books *Smuggled* (Hoser, 1993) and *Smuggled-2* (Hoser, 1996) and as a direct consequence of these publications, the New South Wales NPWS were forced in 1997 to rewrite their reptile laws to allow the legal trade in captive-bred reptiles for the first time in 24 years. The main reptiles being sought from West Head Road were the diamond pythons and the death adders. With both retailing for between 100 and 200 dollars per snake (on average) it soon became cheaper and easier to buy the snakes rather than waste time and money to try to find one in the wild.

And thus, now you have the situation where the only herpers likely to be seen driving along West Head Road in search of reptiles are those who genuinely want to see the critters in the wild.

And what about all the Death Adders I caught? Well, before I had my collection of snakes stolen in mid 1984, I was breeding so many of them, that after giving away as many as I could, I was still forced to cart the surplus back into the bush and release them, simply because there was no viable alternative. They bred er, well, like death adders!

Fishing Trips

Driving along West Head Road and other bush roads in search of herps is a bit like a fishing trip. You always want to catch something, even if it's not what you want. Over the years, I've kept detailed records of what I have and haven't found on all my night drives, including those in the West Head/Cottage Point area (the roads interconnect via system of bush roads, all of which have herps on them).

And here's a few of my "best of" stats. If living in Sydney there is usually only about one night really worth snake-hunting every two weeks or so during the warmer months from late November to early March. This at least applies to all the decent roads near the coast, which as a matter of course are affected daily by a (usually northeasterly) sea breeze, including West Head Road and others in Kurringai Chase, Old Pacific Highway and the Woronora Dam Road to Sydney's south (see below).

Occasionally there is a good night outside these months, but these nights rarely yield much, even if temperature and other conditions are okay. Generally it is not worth getting in the car unless it is seasonally warm and 24°C or more at the time

you are on West Head Road and adjacent areas. This usually means you don't make a decision to go there unless is it over 25° an hour before dusk and there is little prospect of a temperature drop.

The northeast sea breeze is best treated as a cold wind and it will as a matter of course put the temperature in Kurringai Chase to 22°C or lower (in midsummer) by dusk. It blows most days.

The best time (in fact the only logical time) to drive in search of herps is the period from sunset onwards until the temperature drops below 23 or 24°, or midnight, whichever comes first. Although on very hot nights snakes will be found after midnight, this does become less common.

Thus from the above you can see that most nights in Sydney, even during the height of summer are not good snake nights in terms of herping. However when a northwesterly blows preceding a cold front, the sea breeze may not blow. This usually only happens within the 24 hours preceding a front. This is also the only time that as a matter of course the dusk and night time temperature is likely to stay over 24°C in the Kurringai Chase area. While herps do move on cooler nights, the reality is that as the temperature drops below this preferred number (24°) so too do the herps.

At temperatures above 24°C the number of reptiles will (all other things being equal) also drop, but this is rarely a problem, because as most nights progress the temperature will drop through the preferred range anyway, and hence the very hot nights are still worth driving.

So here's a few numbers for you to ponder. Take as given that all drives are on good to very good nights, with a few dodgy ones thrown in. I have done over 100 night drives in the West Head/Cottage Point areas.

- Death adders average about one every 2.5 nights; most are males.
- Diamond pythons average about one every 3.5 nights; most are immature.
- Brown tree snakes (*Boiga irregularis*) average about one every five nights (most are found immediately adjacent to a few well-defined rock outcrops, which they inhabit).
- Red-naped snakes (*Furina diadema*) average about one every three nights.
- Small-eyed snakes (*Rhinoplocephalus nigrescens*) average about one every six nights.
- Tiger snakes (*Notechis scutatus*) average about one every five nights (most being immature).
- The average for the bandy bandy (*Vermicella annulata*) is about one every four nights.
- Golden crowned snakes (*Cacophis squamulosus*) average about one every three nights.
- Blind snakes (*Typhlina* spp.) average about two every three nights.

Also seen are legless lizards (Burton's [*Lialis burtonis*] and scalyfoot [*Pygopus lepidopodus*]), and four species of gecko. On one occasion for which I can offer no explanation an eastern bluetongue skink (*Tiliqua scincoides*) was seen crossing Mona Vale Road, St. Ives, at 12 midnight at 25°C.

In terms of "mosts" per night, here's a few numbers:

- Most death adders — five, but two had been hit by cars and killed.
- Most diamond pythons — two.
- Most brown tree snakes — two.
- Most red-naped snakes — four.
- Most small-eyed snakes — three.
- Most tiger snakes — two.
- Most golden crowned snakes — five.
- Most bandy bandy's — two.
- Most blind snakes — five.
- Most legless lizards — eight, four of each species on the same night.

And on an average (good weather) night you'd expect to find about three snakes or legless lizards.

So it's obvious that the scale of herps to be seen in Australia's southeast when night hunting, even on the best of roads, pales into insignificance when compared with some of the richer pickings in northern Australia. For example I once caught over 100 desert death adders (*Acanthophis pyrrhus*) in one night on the main highway (?), a road between Sandfire and Port Hedland, in Western Australia, and that's before I added on the Stimson's pythons, womas and other less notable critters.

The Other Nocturnal Critters

But there are also other animals you see when night driving that add to the thrill of the chase. If you are stupid enough to go for a drive on a bright moonlight night, you can't help but see the nocturnal birds of prey sitting around the roads, just waiting for the reptiles that are too stupid and come out on such nights. Owls dominate here and are rarely seen on the darker nights that favor the herps.

On all nights you run the likelihood of seeing the small native mammals. Around Sydney (including West Head) you see with reasonable frequency the following, brush-tailed possums (*Trichosurus vulpecula*), ring-tailed possums (*Pseudocheirus peregrinus*), bandicoots, antechinuses (marsupial mice), pygmy possums (*Cercartetus nanus*), and other ratlike creatures usually scurrying across the road. Sometimes you'll be lucky enough to see a swamp wallaby (*Wallabia bicolor*) (small kangaroo), while relatively uncommonly (around Kurringai Chase) you may see a koala (*Phascolarctos cinereus*) on the road. Take note: koalas are not the cuddly creatures people usually make out. They are grumpy, smelly things that will scratch and piddle on you if you try to pick them up, and they make the most grotesque noises that appear to emanate from the stomach that one could ever hear.

Around Kurringai Chase (including the West Head/Cottage Point areas), the various small mammals also have their pre-

ferred habitats and areas. The koalas are most common around McCarr's Creek, and I've never seen one on the West Head Road proper. Brush-tailed Possums are most abundant in the valley areas where the trees are largest. These are the larger of the two possum species and when on roads, often stand up on their hind legs to have a look around. It's easy to confuse them with a small wallaby or kangaroo. They are most commonly seen in the area around Coal and Candle Creeks, and rarely seen on West Head Road proper, save for the Commodore Heights picnic area. Ring-tailed possums around Sydney prefer sandy heath type habitats and areas immediately adjacent. As a result they are most commonly seen on the West Head Road and less frequently on the highest parts of the Cottage Point Road and General San Martin Drive. They are easily recognized because of their habit of holding their tail straight behind them and their having a whitish tail tip.

The wallabies range widely, but have a preference for wetter and grassier habitats. The smaller mammal species are also more common in the wetter habitats, such as those nearer the valleys, but are found in almost all areas. On a given night drive in Kurringai Chase, it's typical to see two or three native mammals on the roads, and the best thing about them is that they aren't as temperature fussy as the herps. You'll even see them in the middle of winter!

Then there's the frogs. Kurringai Chase has quite a diversity of frog species, but in terms of numbers, the place is not really so great. In terms of night driving, the species likely to be seen on rainy nights also come out on the warm dry nights as well, albeit to a lesser extent. Perhaps the most notable (and maybe most commonly seen) frog on the West Head and Cottage Point Roads is the giant burrowing frog (*Heleioporus australiacus*). Found throughout Kurringai Chase, they are most common where they breed, which is usually smaller creeks on high ground and in sandy areas.

Heleioporus Hill (the first hill past that at the junction of West Head and Coal and Candle Creek Road) is without doubt the best place to see the species at night. They obviously breed here and even on warm nights it's not unusual to see one or more specimens foraging across the road. They are often missed by herpers because they never seem to move and look like a large misplaced rock.

The next most commonly seen frog on the West Head and Cottage Point Roads is the Freycinet's treefrog (*Litoria freycineti*), which is a fast jumping and sharp-snouted species. Usually seen when jumping across the road, they are easy to capture because they usually jump off the road and stop. With a torch they can be easily located and then grabbed. This species also turns up occasionally on even the hottest and driest of nights.

Of course if one drives these roads on rainy nights, particularly in the period November/December, frogs are at their most common and easily found. Other species seen on roads in the area include the banjo frog (*Limnodynastes dumerilii*) and White's treefrog (*Litoria caerulea*).

However the bush itself is home to many other species, which for reasons I am not certain, never seem to come onto the roads. One May I camped at Ingleside (a few km south-east of the start of West Head Road) and found large numbers of the whistling treefrogs (*Litoria verreauxii*) breeding around a pair of farm dams. At night, the call of the frogs was almost deafening. The species is relatively unusual among Sydney frogs in that it breeds in autumn instead of spring. The nights were distinctively cool (by Sydney standards); notwithstanding this, the frogs seemed undeterred. Smaller numbers of the species were found along McCarr's Creek, which is in many ways a typical Sydney creek that cuts through sandstone country and is a series of ponds punctuated by small sandstone rivulets and waterfalls. This species isn't generally common around Sydney.

Hibernating under a rock adjacent to the dam I found a single pair of green and golden bell frogs (*Litoria aurea*). Yes, they were caught during the day. No others have even been found by myself anywhere near the Kurringai Chase area, which isn't all that surprising. The species is thought to be invasive and appears to do best in severely altered and even degraded habitats. As most of Kurringai Chase is pristine bushland, it isn't surprising that the species has never been able to establish itself there in numbers.

The following spring, larger numbers of another frog (*Litoria phyllocroa*) were found breeding along McCarr's Creek. Back at the dams at Ingleside I found smaller numbers of *Limnodynastes peronii* (a large brown frog) and *Ranidella signifera* (a tiny brown frog) breeding. Neither species was found along the sandstone creek habitat of McCarr's Creek.

On the hills of Kurringai Chase, including adjacent to McCarr's Creek another species of frog is very common. This is the red-crowned toadlet (*Pseudophryne australis*). Tiny in size and characterized by the bright markings on the head, these frogs are most commonly seen in the cooler months hiding under rocks adjacent to the soaks in which they breed. If you spend a day on the hills looking for herps, you can't help but find some of these.

There is another species of frog known from Kurringai Chase, but which is rarely seen there. This is the beautiful Blue Mountains treefrog (*Litoria citropa*). I've never seen any of this medium sized frog on Sydney's North Shore area, save for about five specimens I found once during the day inhabiting crevices behind a waterfall in a creek that ran near Duffy's Forest (Kurringai Chase). No doubt it'd be possible to find them around West Head, and even crossing the road, but let me put it this way . . . I never have.

Blue Mountains treefrogs are strange in terms of when and where you find them. Once the Australian Herpetological Society (AHS) spent three days in a forest at the Wattagan Ranges (about 100 km north of Sydney) looking for herps. They found all manner of things and masses of frogs of different species. But this did not include *Litoria citropa*. Some years later I returned to the same spot on a rainy spring night and spent a few hours night hunting for frogs. Within minutes I'd caught a single adult *Litoria citropa*, but then found no others.

The Diurnal Stuff

Yes, you can find this as well when night driving. Er, well almost. It's common to take a night drive along the roads of Kurringai Chase and see the remains of the previous day's killing fields on the roads. Usually this translates as one or two reptile carcasses. These however represent but a fraction of what is actually killed on the roads in a given day. You see some of the bodies are picked off by the birds, while perhaps even more of the reptiles that get hit manage to crawl off the roadway before dying a painful death.

Reasonably commonly seen dead on West Head Road are: Rosenberg's monitors (*Varanus rosenbergi*); yellow-faced whipsnakes (*Demansia psammophis*) and even red-bellied black snakes (*Pseudechis porphyriacus*). In the lower areas lace monitors (*Varanus varius*) are also a common casualty of the traffic.

Rosenberg's monitors are one of those species that one only sees occasionally. They never seem to occur in particularly high population densities and based on my own observations of them in the wild, they obviously forage across wide areas. And while they prefer sandy and heath habitats, they are also seen in other habitats, although usually in proximity to their preferred areas. During the day, these lizards typically run away and if really pressed will eventually run down a hole or climb a tree.

However they are nowhere near as good at climbing as the lace monitor. Because adults of both species are gray in color, they are commonly confused by people, including inexperienced herpers. The New South Wales National Parks and Wildlife Service recently put the Rosenberg's monitor on one of their rare and endangered lists, but the designation really isn't a fair one. You see their populations don't appear to be under threat and their general sparseness in number is something that has always been the case. Being at the apex of their food pyramid and the fact that their habitat is not a particularly productive one in terms of food (noting the poor quality sandy soils), low population densities are probably perfectly normal and are in fact why local populations remain generally healthy. Having said this, I am often asked by non-Australian herpers where the best places to see the species in the wild are. Around Sydney, I've seen most in the Garrigal National Park in the areas of Middle and Deep Creeks, which is the area to the East of Mona Vale Road, Terry Hills. During the warmer months, it is about average to see a specimen on this species every few days if foraging around the bush in search of herps. The species is also reasonably commonly seen around most parts of Kurringai Chase and the other sandstone national parks around Sydney.

South of the city, the place I've seen most Rosenberg's monitors is around Waterfall on the Royal National Park side of the railway. My reptile finding dog was great at bailing up this species, but even with him, it was unusual to see more than one of this species in a day. Quite often we'd see none! In my experiences, the lace monitors are on the whole, no more common around Sydney than the Rosenberg's monitors (I averaged more Rosenberg's over the years). The difference is that in the National Parks, Rosenberg's seem to sparsely populate the whole general area, while the lace monitors are more patchy in terms of where they live.

Within these constraints, lace monitors are distinctly more numerous where they occur—the lowland and riverine areas with the largest trees. In Kurringai Chase, this is particularly around the deep-forested gullies around Cowan Creek, Coal and Candle Creek and to a lesser extent Smith's Creek. In the area around Kurringai High School between North Turramurra and Bobbin Head, it is not unusual to see three or four lace monitors in a single day, which by Sydney standards is a lot.

To be continued

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Book Review: *Cusco Amazónico: The Lives of Amphibians and Reptiles in an Amazonian Rainforest* by William E. Duellman. 2005. 472 pp., 236 color photos, 235 figures, 71 tables. Cornell University Press, Ithaca, NY. Cloth. ISBN 0-8014-3997-3. $74.95 list*

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Bill Duellman, Curator Emeritus of the Natural History Museum and Professor Emeritus of Ecology and Evolutionary Biology at the University of Kansas, has been a very productive herpetologist for the past five decades. Some of his most widely recognized books include *Biology of Amphibians*, *Hylid Frogs of Middle America* and *The South American Herpetofauna—Its Origin, Evolution, and Dispersal*. His latest book on the lives of amphibians and reptiles at the Cusco Amazónico Reserve (formerly spelled "Cuzco") in southern Amazonian Peru is yet another detailed herpetological classic. One of the difficulties of having amassed a huge amount of data about a complex subject, is how to organize it to the extent that it can be of utmost use to its intended audience. Bill Duellman is a master at this task as exemplified by the present book.

Shortly after 1983 when Duellman first visited the reserve, he planned a herpetological study of the site that addressed the following questions: 1. What species occur at the site and what is their relative abundance?; 2. What parts of the total habitat does each species utilize?; 3. What are their seasonal and daily activity patterns?; 4. How and where do these species reproduce?; 5. What is the position of each species in the ecological web? The answers to these questions form the substance of the book.

The Amazon Basin, which covers about one-third of the landscape of South America, contains the greatest diversity of life on Earth. The Cusco Amazónico Reserve comprises 196 hectares (484.12 acres) including laboratory and lodging facilities. The reserve lies at an elevation of 200 meters (660 feet). The habitat is Amazonian rainforest. The field work here yielded 66 species of anurans, 5 species of turtles, 3 species of crocodilians, 25 species of lizards, 1 species of amphisbaenian, and 51 species of snakes.

This book is organized and detailed to the extent that it may serve as a comparative base for other herpetological studies of Amazonian rainforests. The introduction points out how to use the book. This is followed by a section on the methodology used in the acquisition and analysis of both field and laboratory work. Next the environment of the reserve is thoroughly discussed, including its location, topography, hydrology, soils and climate. The vegetation, including structure, composition, and diversity is discussed and compared with other areas.

A major division called "Life in the Rainforest" begins with a table featuring the updated taxonomy of the herpetological taxa of the reserve as well as notations on records made by Duellman and Salas (1991) in their preliminary study of the site. Following this table, important sections are "The Herpetological Assemblage" including species composition and species discovery rates (the rate of snake discovery is the lowest), "Abundance and Mass," including declining amphibian populations, "Seasonal Patterns" (a very detailed section), "New Generations" relating to reproduction, "Biogeography," including the history and biogegraphy of the Amazon basin as well comments on the herpetofauna of the entire Departmento de Madre de Dios. Finally, "Human Impact" on the herpetofauna of this area closes this major division.

The last two-thirds of the book deals with each amphibian and reptile species of the study area. To most of us who are not particularly familiar with the herpetofauna of this area, this probably will be the heart of the book. The amphibian section begins with a well illustrated key to species, where such drawings as digits of fingers, parotoid glands, dorsal views of heels, eyelids, views of hands showing presence or absence of prepollical spines, and snout shapes are very helpful.

Tadpoles of anuran species are particularly well covered. Drawings of tadpoles in lateral view as well as tadpole oral discs in frontal view supplement this section, which is a classic by itself.

Topics in each frog and toad species account include: synonymy, identification, characteristics, occurrence, reproduction, advertisement call (with sonagram), tadpoles, food and remarks. Ninety-five photographs in color supplement the amphibian section as well as numerous tables that present data on the growth and development of tadpoles. The legends of the color photographs give the sex, snout–vent length, usually the museum number, and locality of each anuran depicted.

The reptile section begins with a key to the groups of reptiles (turtles, crocodilians, lizards, an amphisbaenian, and snakes) as well as well-illustrated keys to the species of each of these groups. Illustrations consist of such useful drawings as dorsal views of crocodilian skulls; turtle carapace and plastral parts; lizard digits, heads, head crests, dewlaps, and tail and body scutellation; and snake heads, scales at midbody, anal regions, and color patterns. Topics in each reptile species

account include: synonymy, identification, characteristics, occurrence, reproduction, food and remarks. One hundred and twenty color photographs depict the turtles, crocodilians, lizards, amphisbaenian, and snakes. The legends of the color photographs give the sex, usually the snout–vent length, often the museum number, and the locality of each reptile depicted.

The end matter of the book includes a detailed glossary, a literature cited section, and a taxonomic index. Needless to say, I highly recommend this excellent book to members of the Chicago Herpetological Society as well as the rest of the herpetological and biological community.

An imaginative epilogue at the end of the book fictionalizes three young herpetologists, who several decades from now are engaging in a herpetological study of the Cusco Amazónico Reserve, now a part of the Madre de Dios Biosphere Reserve. These folks, armed to the teeth with new technology, admit that the old guys were pretty good field herpetologists, but suggest that they can do as much work in a week or so as their predecessors could do in many months. I will leave it to the readers of this book to find out Bill Duellman's parting shot.

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Herpetology 2005

In this column the editorial staff presents short abstracts of herpetological articles we have found of interest. This is not an attempt to summarize all of the research papers being published; it is an attempt to increase the reader's awareness of what herpetologists have been doing and publishing. The editor assumes full responsibility for any errors or misleading statements.

REPRODUCTIVE TIMING IN THE VIPERINE SNAKE

X. Santos et al. [2005, Amphibia–Reptilia 26(2):183-191] report on reproductive timing in the viperine snake, *Natrix maura*, a common water snake that forages on aquatic prey such as fish and frogs in Western Mediterranean water bodies. Female viperine snakes collected from three populations on the Iberian Peninsula during the vitellogenesis period were compared. Mean clutch size and range, as well as the slope of the regression between body size and clutch size, did not show differences between populations. In contrast, mean size of enlarged follicles of females collected in May from the Ebro Delta proved significantly smaller than those of females from the Matarranya River (50 km distant) and the Granada Depression (500 km distant). There were no differences in climatic conditions between areas. However, seasonal variation in food availability was significantly different in the Ebro Delta. In this area, the rice fields are dry in early spring as men control the water flow, and prey are not available. This energetic constraint induced female viperine snakes to adjust reproductive timing according to seasonal availability and to delay vitellogenesis for at least one month. By contrast, other Mediterranean populations exhibited a rather high prey availability from early spring (e.g., Matarranya River), females being in good condition in this season and consequently vitellogenesis starting earlier than in the Ebro Delta. This study illustrates a new case of reproductive plasticity in snakes.

FROG BREEDING PATTERNS IN THE PANTANAL

C. P. de A. Prado et al. [2005, Amphibia–Reptilia 26(2): 211-221] describe annual patterns of breeding activity, reproductive modes, and habitat use for a frog community in a seasonal environment, in the southern Pantanal, Mato Grosso do Sul, Brazil. Data were collected monthly between January 1995 and December 1998. A total of 24 species from four families; Bufonidae (3 species), Hylidae (10 species), Leptodactylidae (9 species), and Microhylidae (2 species) were registered. Three reproductive activity patterns are recognized among these species: continuous, explosive and prolonged; 50% of the species were explosive breeders. Seasonal pattern of reproduction was verified for three analyzed years (1995–1997); most species reproduced during the rainy season (Nov–Jan). The reproduction was aseasonal in 1998; unexpected rains in the dry season led to an unusual breeding activity. Five reproductive modes were noted—62.5% of the species have the generalized aquatic mode, and 33.3% deposit eggs embedded in foam nests. Many species used the same sites for reproduction, although temporal partitioning and calling site segregation was observed. The occurrence of many species that exhibit explosive breeding early in the rainy season is common in seasonal and open environments with variable and unpredictable rainfall, as is the case in the Pantanal.

MICROBIAL FERMENTATION IN SLIDERS

S. S. Bouchard and K. A. Bjorndal [2005, J. Herpetology 39(2):321–324] note that herbivorous reptiles use microbial gut symbionts to digest plant material. These symbionts ferment cell wall components, producing short-chain fatty acids (SCFA), which the host uses as an energy source. In reptiles, fermentation usually occurs in the large intestine; however, the freshwater Florida red-bellied cooter, *Pseudemys nelsoni*, has both small and large intestine fermentation. Although small intestine fermentation has not been found in other chelonians, no other freshwater turtles have been examined. The authors measured SCFA concentrations in the digestive tracts of juvenile and adult pond sliders, *Trachemys scripta*. Like many other turtles, *T. scripta* experiences an ontogenetic diet shift from carnivory to herbivory, and it is unknown whether juveniles can digest plant material. The study addressed whether (1) this species harbors small intestine fermentation, (2) juveniles possess SCFA concentrations comparable to other herbivorous reptiles, and (3) a change in relative fermentation chamber capacity accompanies the diet shift. The researchers fed turtles a plant diet for five weeks and then measured SCFA concentrations in their gastrointestinal tracts and the mass of gastrointestinal tract contents. Both juveniles and adults had SCFA concentrations comparable to other herbivorous reptiles; however, they did not have significant small intestine fermentation. Additionally, there was no difference between the relative masses of juvenile and adult fermentation chamber contents. Therefore, the ontogenetic diet shift in *T. scripta* is not accompanied by a change in relative gut capacity.

GREEN SEA TURTLE SURVIVAL ESTIMATES

C. L. Campbell and C. J. Lagueux [2005, Herpetologica 61(2):91-103] report that the largest remaining green turtle (*Chelonia mydas*) population in the Atlantic is potentially threatened by the resurgence of a commercial green turtle fishery in Nicaragua. Nicaragua is the site of the principal feeding ground for adults from the Tortuguero, Costa Rica, rookery. Little is known about the life history parameters of this population away from the nesting beach. To better understand the potential impact of harvesting in Nicaragua on the Tortuguero population, the authors estimated survival rates of adult females tagged on the nesting beach at Tortuguero, and a mixed group of large juveniles and adults tagged at turtle fishing sites in Nicaragua. Based on band recovery analysis, large juvenile and adult green turtles tagged at Nicaragua turtle fishing sites have a very low annual survival probability, 0.55. Adult females tagged on the nesting beach, which may forage at a broad range of Caribbean feeding grounds, had an annual survival probability of 0.82. These survival rate estimates are likely too low to sustain the population and have important implications for the future of the Tortuguero rookery.

CONSERVATION OF LESSER ANTILLEAN REPTILES

R. Powell and R. W. Henderson [2005, Iguana 12(2):63-77] address the conservation status of terrestrial reptiles in the Lesser Antilles. Although many species in the region are ecological generalists and have adapted to the presence of humans, nearly half of the reptilian species native to the archipelago have suffered as a consequence of human alterations of their habitats or introductions of alien predators and competitors, often aggravated by catastrophic natural events such as hurricanes. Particularly vulnerable are species that are terrestrial and diurnally active. Although many of the listed factors have contributed to the decline or elimination of particular species from individual islands, the authors contend that the introduction of the mongoose is the single event most responsible for the extirpations and declines of many Lesser Antillean reptiles.

SYSTEMATICS OF WEST AFRICAN *CHALCIDES*

E. Greenbaum [2005, African J. Herpetology 54(1):17-29] notes that, since their original descriptions a century ago, the West African skink taxa *Chalcides pulchellus* and *C. thierryi* have fluctuated in taxonomic status in the literature. Until recently, *C. pulchellus* was known only from the holotype, but recent collecting has increased the number of specimens to nine, which allows more robust comparisons with *C. thierryi*. A Principal Components Analysis of fourteen measurements indicated distinct and non-overlapping clusters for each taxon. *Chalcides pulchellus* has an additional phalanx in Toe IV compared to *C. thierryi*, and significant differences in numbers of dorsal scales around midbody, ventrals, subdigital lamellae of Toe IV, and presacral vertebrae exist between the taxa. The types of both valid species are redescribed in detail and natural history information is summarized.

INTER-ISLAND VARIATION IN *TRACHYLEPIS*

J. Gerlach [2005, African J. Herpetology 54(1):31-42] notes that skinks of the genus *Trachylepis* are geographically widespread and diverse. In the Seychelles islands two species are present, *T. sechellensis* and *T. wrightii*. All island populations of these two species were studied in 2000–2003 and the morphology of the populations compared to museum specimens. The two species are distinctive in morphology, although convergence occurs on some small islands occupied by large colonies of breeding seabirds. The taxon "*Mabuya wrightii ilotensis*" represents one example of this and was re-identified as a form of *T. sechellensis*. The morphology of this population has changed over the last 67 years, probably as a result of the decline of the seabird colony on the island. More extreme changes have occurred on other islands where the loss of seabird colonies has been followed by the replacement of the seabird specialist *T. wrightii* by the more generalist *T. sechellensis*. A reverse process of convergence towards the *T. wrightii* morphology was observed in recently established *T. sechellensis* populations on islands with large or increasing seabird colonies. This highlights the adaptability of some island populations and the need to consider distinct islands as part of a metapopulation.

PICKEREL FROG VOCALIZATIONS

M. F. Given [2005, J. Herpetology 39(2):223–233] performed playback trials with and recorded vocalizations of male pickerel frogs, *Rana palustris*, in 1992–1993 and 1998–2000 at sites in Delaware and Pennsylvania. He also conducted a mark-recapture study of one population throughout its 1998 breeding season at the Ashland Nature Center, Delaware. *Rana palustris* had a prolonged breeding season with chorusing occurring over more than one month on nights that the air temperature was at least 8°C. Individual males during the breeding season participated in most choruses, were faithful to specific calling sites, and lost body mass. In the playback trials, male vocalizations were recorded during control conditions and after the playback of one conspecific advertisement call. Males had a complex vocal repertoire consisting of at least three call types: an advertisement call and two additional calls ("snicker" and "growl") that were elicited by the playback stimulus or exchanged during natural male–male interactions. The three call types had distinct combinations of duration and pulse rate, and the snicker and growl had similar dominant frequencies that were significantly lower than those of the advertisement call. All males in the playback trials eventually returned to advertisement calling; however, these calls differed from the calls emitted during the control period in that they had shorter durations, longer rise times, and a shift of energy toward lower frequencies. Several males responded to the stimulus by emitting a series of underwater calls before returning to the water's surface and calling into the air. Overall, *R. palustris* has a complex communication system in terms of number of call types, the ability to alter call properties, and the ability to vocalize in both air and underwater.

AQUATIC HABITAT USE BY BOX TURTLES

B. M. Donaldson and A. C. Echternacht [2005, J. Herpetology 39(2):278-284] note that the literature on eastern box turtles (*Terrapene carolina carolina*) often characterizes them as terrestrial with only anecdotal references to their aquatic habits. The rapid decline in many populations of box turtles suggests an urgent need to assess all aspects of their habitat requirements. In this study, trailing devices and radio transmitters were used to determine seasonal movements and the extent to which turtles used aquatic habitats within their home ranges. Home ranges averaged 1.88 ± 0.49 ha via minimum convex polygon analysis, and 2.26 ± 0.76 ha via 95% fixed kernel analysis. Kernel estimators were more effective at representing uneven home range use, often demonstrating the extensive use of water. A total of 131 turtles were found in two small temporary ponds from June through August. Individuals remained in the ponds for up to 23 consecutive days. As many as 32 turtles were found at one time in one of these ponds. Turtles often extended their home ranges by means of abrupt linear movements toward water in response to high temperature and low precipitation. Wet areas have a significant influence on eastern box turtle life history. Box turtles should be considered in wetland area conservation decisions where appropriate.

Unofficial Minutes of the CHS Board Meeting, July 15, 2005

Linda Malawy called the meeting to order at 7:32 P.M. Board members Zorina Banas, Sean Bober and Jenny Vollman were absent.

Officers' Reports

Recording Secretary: Melanie Aspan read the minutes of the June 17 board meeting. The minutes were approved as presented.

Treasurer: Jim Hoffman presented the June financial statements. Checks were distributed for this year's Field Museum Show parking and Jim confirmed that he has invoiced the Museum for these items. Jim also reported regarding the issue of having two telephone numbers associated with our voicemail account.

Membership Secretary: The Society currently has 606 members. Jennifer Spitzer agreed to generate a report which will include the current membership count and a graph to help illustrate her meeting reports going forward. Jennifer was also requested to draw up a job description for this position. It was suggested that a short survey should be distributed at upcoming meetings to poll the interests of the membership regarding speakers and other issues. Melanie Aspan agreed to create this survey with the assistance of Ron Humbert.

Publications Secretary: Mike Dloogatch presented a ZooMed ad which will be running featuring an image of the CHS *Bulletin*. Mike also presented the suggestion that a supplemental issue of the *Bulletin* be printed to distribute an article by James B. Murphy and David E. Jacques, entitled "Death from Snakebite: The Entwined Histories of Grace Olive Wiley and Wesley H. Dickinson." Mike moved that we publish this special supplemental issue of the CHS *Bulletin*. Ron seconded the motion. After much lively debate regarding adding a disclaimer, the motion was passed with Betsy Davis opposed and all others in favor.

Sergeant-at-Arms: Ron Humbert reported 47 attendees at the June General meeting. He also provided the following figures: Lowest attendance for 2005—33. Highest attendance for 2005—72. Average attendance for 2005—56.

Committee Reports

Shows: August 6 & 7 were presented as Notebaert show dates. A Park District show is scheduled for late September with more details to come.

Raffle: Karen Bielski will be taking over this endeavor.

Adoptions: It was agreed that an announcement should be posted on the CHS website notifying visitors that we will no longer accept green iguanas into the Adoptions program.

General Meetings: Ron Humbert will give the short presentation on Illinois herps at the August meeting. His topic will be cave salamanders.

Nominating Committee: Linda Malawy announced the finalization of this committee for this year. Rich Crowley will serve as Chairman and John Bailey, Zorina Banas, Bob Bavirsha and Betsy Davis will serve with him.

Grants Committee: Linda asked Mike Dloogatch and Steve Sullivan to serve on this committee for 2005 and to complete the committee with one other person.

Conservation: Linda let it be known that a check intended for the massasauga conservation fund is on its way to us from Rob Carmichael.

Old Business

Neodesha Business Offer: Linda Malawy announced the sale of a number of items from this shipment to interested pet stores. Mike Dloogatch moved to authorize Adoptions to buy merchandise received from Neodesha which Adoptions deems appropriate. Jim Hoffman seconded this motion and it was passed with all in favor.

2005 Trip to Big Sand Mound: September 10 has been decided on as the date for this trip. Interested parties should contact Deb Krohn.

Esther Lewis Memorial Plaque: Betsy Davis will be passing the appropriate information to Steve Sullivan to get this item into production.

Paypal: Jim Hoffman presented cost information regarding this item and was authorized to set up a Paypal account for the CHS.

New Business

Exchange publications: Gary Fogel has requested that a new home be found for old exchange publications stored at his home as well as transportation to said new home.

Roundtable

Linda mentioned Dave McGowan's upcoming appearance on NPR. Although this will air at a very early hour, the program will also be available on their website.

The meeting was adjourned at 9:55 P.M.

Respectfully submitted by Melanie Aspan, Recording Secretary.

Advertisements

For sale: rats and mice—pinkies, fuzzies and adults. Quantity discounts. Please send a SASE for pricelist or call Bill Brant, *THE GOURMET RODENT*, 6115 SW 137th Avenue, Archer FL 32618, (352) 495-9024, E-mail: GrmtRodent@aol.com.

For sale: from **The Mouse Factory**, producing superior quality, frozen feeder mice and rats. We feed our colony a nutrtionally balanced diet of rodent chow, formulated especially for us, and four types of natural whole grains and seeds. Mice starting from: pinks, $.17 each; fuzzies, $.24 each; hoppers, $.30 each; weanling, $.42; adult, $.48. Rats: starting with pinks at $.45 each, to XL at $1.80 each. Discount prices available. We accept Visa, MC, Discover or money orders. PO Box 85, Alpine TX 79831. Call **toll-free** at (800) 720-0076 or visit our website: < http://www.themousefactory.com> .

For sale: **high quality frozen feeders**. Over a decade of production and supply. Seven sizes of mice availabe: small newborn pinks up to jumbo adults. Prices start at $25 per 100. Feeders are separate in the resealable bag, not frozen together. Low shipping rates. Free price list. Kelly Haller, 4236 SE 25th Street, Topeka KS 66605, (913) 234-3358 evenings and weekends.

For sale: herp books. *The Terrestrial Reptiles of Australia's Island Territories* by H. Cogger, R. Sadlier and E. Cameron, 1983, 80 pp., 24 color plates, 37 figs., 16 tables; softbound, herpetofauna of the Norfolk, Christmas, Cocos and Coral Islands, $38; *A Field Guide to Reptiles and Amphibians of the U.S. and Canada East of the 100th Meridian* by Roger Conant, 1958, 366 pp., 40 color and b&w plates, drawings, range maps, the first printing of the first edition of this book, no DJ, spine slightly scuffed at top and bottom, binding loose, $40; *Serpientes Venenosas de Costa Rica* by Clodomiro Picado T., 2nd edition, 1976 (1931), 241 pp., 58 figs. (b&w photos), softbound, pages and cover somewhat warped, $90. Prices include postage. William R. Turner, 7395 S Downing Circle W, Littleton, CO 80122, (303) 795-5128, e-mail: toursbyturner@aol.com.

For sale: Captive bred adult radiated tortoises. You must have CBW permit to purchase. If you do not have a permit, I can help you obtain one. The permit is not hard to get. Takes sixty days. Cory, (815) 233-5567. Permit No. MA 102728-0.

For sale: c.b. blue-tongued skinks, *Tiliqua scincoides*, born August 2004, $70 each. Linda Malawy, (630) 717-9955.

For sale: c.b. '05 Jampea reticulated pythons, $350 each plus shipping. These are hatchlings from c.b. parents. Would be glad to send pics of parents or hatchlings if requested. Jim Gaspar, (219) 696-1432, email: GASPAR5@comcast.net.

For sale: **Locale specific reticulated pythons**, c.b.b, Bali Island yellowhead retics, second clutch of offspring produced from my LTC adults. A smaller insular form, an "almost dwarf" if you will. Average adult lengths: (♀)13– 14′; (♂)8– 10′. Eating adult mice/rat crawlers, $225. Also: Nonlocale "Howe" yellowhead retics, c.b.b., my bloodline, known for brilliant lemon yellow heads. A top of the line yellowhead bloodline; bred for coloration and pattern, this is a standard sized retic, eating large adult mice/weanling rats, $150. Photos available of offspring and parents from either bloodline. Shipping available. Please contact Notah Howe with any questions or to purchase. Email: nhherp@yahoo.com.

For sale: c.b. '03 yellow anacondas, aggressive feeders, perfect health, about 2' long, $100 each; also c.b. '04 reticulated pythons; beautiful hatchlings already feeding on adult mice. These guys are tiger siblings and are available for $100/each as well. Personal checks, money orders and Paypal accepted. Out of state shipping available. If you have questions or would like to purchase an animal call Mark Petros, (847) 836-9426 or E-mail ballpython777@yahoo.com.

Herp Tours: Why pay more? Travel with the International Fauna Society, a 501 (c)3 not-for-profit organization, and experience the Costa Rican rainforest! Stay at the beautiful Esquinas Rainforest Lodge in the untouched herpetological paradise that is Piedras Blancas National Park. Meet new friends, relax in the naturally-filtered swimming pool or in the lush, fauna-filled tropical garden. Discounts for IFS and Chicago Herp Society members. For details, visit The International Fauna Society website at www.faunasociety.org or E-mail: info@faunasociety.org.

Herp tours: Adventure trips to **Madagascar**! Journey somewhere truly unique to seek and photograph nature on the world's least-studied mini-continent. For maximum herp fun and discovery, join Bill Love as we go where few people will ever venture in their lives. Let his experience assure a comfortable tour finding the most colorful and bizarre species on the planet! Get all the details at Blue Chameleon Ventures' comprehensive new website: < http://www.bluechameleon.org> , E-mail: bill@bluechameleon.org, or call (239) 728-2390.

Herp tours: The beautiful Amazon! Costa Rica from Atlantic to Pacific! Esquinas Rainforest Lodge, the Osa Peninsula, Santa Rosa National Park, and a host of other great places to find herps and relax. Remember, you get what you pay for, so go with the best! GreenTracks, Inc. offers the finest from wildlife tours to adventure travel, led by internationally acclaimed herpers and naturalists. Visit our website < http://www.greentracks.com> or call (800) 892-1035, e-mail: info@greentracks.com

Virtual Museum of Natural History at www.curator.org: Free quality information on animals—emphasis on herps—plus expedition reports, book reviews and links to solid information. Always open, always free.

Wanted: Volunteer to help with midwestfrogs.com web site by transcribing videotaped interviews with frog biologists (from VHS). Dave McGowan, dmcgowan3@earthlink.net.

Wanted: Female ball pythons, adults preferred but smaller animals also considered. I am a professional breeder specializing in ball pythons and I can assure you that your animal will be provided with excellent care and optimal living conditions. Mark Petros, (847) 836-9426; ballpython777@yahoo.com.

Wanted: I'm looking for my soulmate. I want to settle down to a family before it is too late. But I have this problem. . . . When we get into hobbies and interests: old popular records, jazz and show tunes, and antique electronics are fine, but when I mention turtles, "What, are you crazy?" So maybe this is a better place to look. Please don't try to separate me from my turtles—at least not most of them. If interested, please drop a line to Ellis Jones, 1000 Dell, Northbrook IL 60062, telling a bit about yourself and giving a phone number.

Line ads in this publication are run free for CHS members—$2 per line for nonmembers. Any ad may be refused at the discretion of the Editor. Submit ads to: Michael Dloogatch, 6048 N. Lawndale Avenue, Chicago IL 60659, (773) 588-0728 evening telephone, (312) 782-2868 fax, E-mail: MADadder0@aol.com.

HERPING TRIP TO BIG SAND MOUNDS NATURE PRESERVE IN MUSCATINE, IOWA

The CHS has been granted access to explore the Big Sand Mounds Nature Preserve on September 10, 2005. This preserve is located along the Mississippi River in Muscatine, Iowa (roughly a 3½-hour drive from the Chicago area). The preserve is privately owned by Mid-American Energy Company and Monsanto Chemical Company. The 510-acre site is a rare sand prairie habitat that boasts a variety of sand-loving reptiles such as the Illinois (= yellow) mud turtle, six-lined racerunner, western hog-nosed snake, bullsnake and ornate box turtle.

This trip is open to all ages but all must be CHS members and there will be absolutely **NO** collecting allowed. Everyone over age 18 must show a valid photo ID to enter the preserve. For more information contact Deb Krohn at (815) 462-3299.

SYMPOSIUM: TIMBER RATTLESNAKES IN THE UPPER MISSISSIPPI RIVER VALLEY

On September 24, 2005, St. Mary's University, Winona, Minnesota, will host a symposium on Timber Rattlesnake (*Crotalus horridus*) Biology and Conservation in the Upper Mississippi River Valley. All interested amateur and professional naturalists are invited to attend as well as interested landowners and members of the general public. The speakers and their topics will be: Phil Cochran, "A History of Timber Rattlesnakes in Winona County, Minnesota"; Jaime Edwards, "Timber Rattlesnake Work with Private Landowners in Minnesota"; Ed Quinn, "Minnesota State Parks: Protecting Timber Rattlesnakes within an Ecosystem"; Dan Keyler, "Timber Rattlesnake Bites in the Upper Mississippi River Valley"; Barney Oldfield, "Velvet Tails of the Blufflands"; Bill Brown, "Long-term Field Study of a Timber Rattlesnake Population: What Has Been Learned?"; Bob Hay, "Status of Timber Rattlesnakes in Wisconsin"; Rich Sajdak, "Habitat Selection and Home Ranges of Timber Rattlesnakes in the Mississippi River Valley"; Craig Berg, "Some Notes on Phenology, Reproduction, and Winter Biology of Timber Rattlesnakes in Wisconsin"; Jeff LeClere, "Timber Rattlesnakes in Northeastern Iowa"; Jeff Parmelee, "Ecology and Conservation of the Timber Rattlesnake in the Agricultural Landscape of Central Iowa"; Brian Bielema, "Reproduction at a Northwestern Illinois Timber Rattlesnake Rookery."

Registration is $20 ($15 for students) payable by check, money order, Visa or Mastercard (note: credit cards will be processed by Serpent's Tale / Zoo Book Sales). Mail registrations to: Dr. Phil Cochran, Dept. of Biology, Saint Mary's University, 700 Terrace Heights, Winona, MN 55987. The Days Inn in Winona [(507) 454-6930] will give a 20% discount if you reserve by 1 September and mention St. Mary's Biology Department. For more information see web page at http://www.smumn.edu/sitepages/pid1715.php or contact Karen McCormick, Biology Dept. Secretary, telephone (507) 457-1544, e-mail < kmccormi@smumn.edu> .

SYMPOSIUM: SNAKEBITES IN THE NEW MILLENNIUM

On October 21–23, 2005, the Durham Research Center, University of Nebraska Medical Center, Omaha, Nebraska, will host Snakebites in the New Millennium: A State-of-the-Art Symposium, including a "behind-the-scenes" snake tour at the Henry Doorly Zoo. Session topics will be: Snakebite Epidemiology; Antivenom Research & Development; Venom Research; Advances in Snake Cladistics; Regulatory Issues; Institutional Acquisition, Care and Handling of Snakes; Clinical Management of Native & Non-Native Envenomations. Invited presenters include: Leslie V. Boyer, M.D., Medical Director, Arizona Poison & Drug Information Center; Richard Dart, M.D., Director, Rocky Mountain Poison and Drug Center; Bryan Fry, Ph.D., Deputy Director, University of Melbourne's Australian Venom Research Unit; Dan Keyler, Pharm.D., Minneapolis Medical Research Foundation; John Perez, Ph.D. Regents Professor and Director of NTRC, Texas A&M University–Kingsville; Steven A. Seifert, M.D., Medical Director, Nebraska Regional Poison Center; Lee Simmons, Director, Henry Doorly Zoo; Craig Smith, FitzSimons Snake Park, Durban, South Africa; and David Warrell, keynote speaker, Professor of Tropical Medicine & Infectious Disease, Oxford University. For more information, visit www.unmc.edu/snakebitessymposium; telephone (402) 559-5145 or toll free at (877) 832-6924; or e-mail < conted@unmc.edu> .

NEW WEBSITE

The Florida Turtle Conservation Trust (FTCT) has launched its new website at www.ftct.org. The FTCT was formed in 1999 by a group of Florida biologists and conservationists concerned with the conservation outlook for Florida turtles. Its purpose is to promote the conservation of all Florida turtle species and the preservation of intact, free-ranging populations and their associated ecosystems throughout the state of Florida. For more info please visit www.ftct.org.

UPCOMING MEETINGS

The next meeting of the Chicago Herpetological Society will be held at 7:30 P.M., Wednesday, August 31, at the Peggy Notebaert Nature Museum, Cannon Drive and Fullerton Parkway, in Chicago. **Jeff Ettling**, Curator of Herpetology and Aquatics at the St. Louis Zoo will speak on "Operation Armenian Viper: Radio-tracking Vipers in Khosrov Reserve." Populations of the Armenian viper, *Montivipera raddei*, have experienced a steady decline over the past twenty years as a result of human pressures. Data from this study will be used to prepare a conservation management plan for the species.

On Wednesday, September 28, naturalist and rabid avocational field herpetologist **Roger Repp** will present "Arizona Herpetological Potpourri: The Last 35 mm Slide Show?" In this presentation, Roger will spurn the use of PowerPoint, maps and charts. He will instead use the best slides of 25 different herpetographers to demonstrate cryptic coloration, color polymorphism, color ontogeny, and natural history aspects of the herpetofauna of Arizona. Roger will take us from the sandy dune country of Arizona to the forested peaks, and include in situ shots of wild herps captured in incredible behaviors. Roger promises that there will be something for all lovers of herps in this program.

Tom Johnson, author of *The Amphibians and Reptiles of Missouri* and former State Herpetologist for Missouri, will speak at the October 26 meeting.

The regular monthly meetings of the Chicago Herpetological Society take place at Chicago's newest museum — the **Peggy Notebaert Nature Museum**. This beautiful new building is at Fullerton Parkway and Cannon Drive, directly across Fullerton from the Lincoln Park Zoo. Meetings are held the last Wednesday of each month, from 7:30 P.M. through 9:30 P.M. Parking is free on Cannon Drive. A plethora of CTA buses stop nearby.

Board of Directors Meeting

Are you interested in how the decisions are made that determine how the Chicago Herpetological Society runs? And would you like to have input into those decisions? If so, mark your calendar for the September 16 board meeting, to be held at the North Park Village Administration Building, 5801 North Pulaski Road, Chicago. To get there take the Edens Expressway, I-94, and exit at Peterson eastbound. Go a mile east to Pulaski, turn right and go south to the first traffic light. Turn left at the light into the North Park Village complex. At the entrance is a stop sign and a guardhouse. When you come to a second stop sign, the administration building is the large building ahead and to your left. There is a free parking lot to the left and behind the building.

The Chicago Turtle Club

The monthly meetings of the Chicago Turtle Club are informal; questions, children and animals are welcome. Meetings normally take place at the North Park Village Nature Center, 5801 N. Pulaski, in Chicago. Parking is free. For more info call Lisa Koester, (773) 508-0034, or visit the CTC website: http://www.geocities.com/~chicagoturtle.

HERP OF THE MONTH

Each monthly meeting will showcase a different herp. CHS members are urged to bring one specimen of the "Herp of the Month" to be judged against the entries from other CHS members. Prizes will be awarded to the top three winners as follows: 1st place—6 raffle tickets at next meeting; 2nd place—4 raffle tickets at next meeting; 3rd place—2 raffle tickets at next meeting. Here are the categories for the next three meetings: August—salamanders; September—tricolor milk- or kingsnakes; October—any herp with orange & black colors.

THE ADVENTURES OF SPOT

WE'RE GONNA HAVE TO SNEAK ON BOARD. HE SAYS THIS WHOLE THING IS GRANPA'S FAULT AND HE'S MAD AT US FOR SOMETHING GRANPA SPOT DID YEARS AGO!
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